

REMARKS

In accordance with the foregoing, claims 1-16, 18-40, and 42-48, without prejudice or disclaimer, and claims 49-94 have been added. No new matter is being presented, and approval and entry are respectfully requested.

Claims 49-94 are pending and under consideration. Reconsideration is requested.

The present Supplemental Amendment is to hereby resolve the confusion at the U.S. Patent and Trademark Office regarding the Preliminary Amendment filed on March 20, 2002 and the non-final Amendment we filed on June 12, 2003.

In the Office Action of January 15, 2003, claims 8, 14, 16, 38, and 40 (now claims 56, 62, 64, 84, and 86) were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Because claims 56, 62, 64, 84, and 86 are rewritten into independent form, they are presumed to be allowable. The Applicant respectfully requests that the Examiner withdraw the objections thereto and allow the claims.

In U.S. Patent No. 5,875,324 to Tran et al. ("Tran"), a RAM of the branch history table/branch prediction array in Tran is a 1RW type (read/write cannot be executed in parallel). If update information that is presented for update matches a fetch request, then the update is bypassed and prediction information is forwarded, because the presented update information is just subsequent prediction information. In contrast, as described later, the present invention limits such bypass control to an RSW configuration (claim 70 of the present invention).

Tran is limited to a branch prediction unit that is configured to delay updating the branch prediction array until a first clock cycle in which the fetch address is inhibited (other claims are the dependent claims thereof). Therefore, the subject matter of Tran is that array reading by a fetch request cannot be inherently interfered with by writing. In contrast, the present invention does not require the branch prediction unit to delay updating until the fetch request is prohibited. The present invention simply requires the branch prediction unit to delay updating in such a way as not to degrade the function by not receiving a fetch request.

Specifically, an operation to fixedly delay updating by several clock cycles should not always be a fetch inhibit after several clock cycles. However, because several fetch requests can be issued by delaying updating by several clock cycles, function degradation can be

suppressed. Specifically, in Tran, appropriate timing is the beginning of fetch inhibit timing, while in the present invention, it is timing that does not directly affect the issuance of a fetch request (it is acceptable if a fetch request precedes updating, and it is also acceptable if updating is made in the middle of a fetch inhibit cycle). In the present invention, there is read/write interference and write priority is allowed in such a way as not to degrade the function. This is incompatible with the complete inhibition suggested by Tran.

Regarding claim 51, a fetch request is not prohibited at all, and it is acceptable if writing is made in a prefetch request cycle, i.e., in a state where a demand fetch request is precedently issued in such a way that there is no need of a demand fetch request. Whether a prefetch request conducts branch prediction depends on its configuration. Whether a prefetch request is prohibited and writing is made with priority or the issuance of a prefetch request and writing are conducted in parallel also depends on its configuration.

It is respectfully requested that the claims of the present invention be allowed.

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. There being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited. At a minimum, this Amendment should be entered at least for purposes of Appeal as it either clarifies and/or narrows the issues for consideration by the Board.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited and possibly concluded by the Examiner contacting the undersigned attorney for a telephone interview to discuss any such remaining issues.


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If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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